Claims

1. Valve with a valve seat which is penetrated by a bore hole for the medium to be controlled, characterized in that the surface (4, 55, 75) of the valve seat (4) has a plurality of concentrically extending channels (6) and elevated structures (7) disposed between the channels (6), wherein the roughness of the surface of the valve as defined by the channels and the elevated structures is larger than a roughness of a surface of a valve closing member, wherein the peaks of the elevated structures (7) can be elastically deformed when the valve is closed to define a plurality of concentrically extending sealing surfaces.

2. Valve according to claim 1, characterized in that the roughness (R_z) of the valve seat surface is <8 µm.

3. Valve according to claim 1 or 2, characterized in that the roughness of the surface of the valve seat (R_z) is approximately 1 µm.

4. Valve according to any one of the claims 1 through 3, characterized in that the surface of the valve seat (4, 55) has a tapered conical form.

5. Valve according to any one of the claims 1 through 5, characterized in that the channels (6) and the elevated structures (7) on the surface of the valve seat are produced by honing without having an advance parallel to the surface.

6. Valve according to any one of the claims 1 through 5, characterized in that, during honing, the surface of the honing tool covers the entire surface of the valve seat, which comes in contact with the valve-sealing member when the valve is closed.

7. Valve according to any one of the claims 1 through 6, characterized in that the valve-closing member is a ball (5).

8. Valve according to any one of the claims 1 through 6, characterized in that the valve-closing member (74) has a flat sealing surface (74').

9. Valve according to any one of the claims 4 through 7, characterized in that the precision of the roundness of the elevated structures (7) and of the channels (6) is $\leq$ 2.0 µm.

10. Valve according to claim 8, characterized in that the tolerance in the precision of the flatness of the elevated structures is <4 µm.

11. Method for the production of a valve seat (4, 55, 75) having a valve seating surface which is subjected to a finishing processing step and which cooperates with a valve closing member, characterized in that the finishing is a honing process carried out by a tool (8) having a tool head (9) cooperating with the valve seating surface, wherein the tool (8) is driven to rotate and produces concentrically extending working channels (6) on the valve seating surface by means of cutting grit (12) disposed on the tool head (9), wherein the amount by which the grit protrudes outward from the surface of the tool head (9) is defined in such a manner that the depth of the channels is sufficiently large to

permit elastic deformation of the elevated structures (7) disposed between the processing channels (6) in response to the seating of a valve closing member on the valve seating surface, thereby forming a plurality of narrow, concentric sealing surfaces.

12. The method of claim 11, characterized in that the valve seat (4, 55) has a conical shape, wherein a basic shape is initially effected in a processing step and a finishing of the valve seat (4) into a conical shape is effected in a subsequent processing step, characterized in that the finishing is a honing process carried out by a tool (8) having a tool head (9) filling a conical shape and with means for introduction of cooling and lubricating materials (13, 14), wherein the tool (8) is driven to rotate and, by means of cutting grit (12) located on the tool head (9), produces processing channels (6) which are disposed concentrically about the conical shape on the valve seating surface, wherein the protrusion of the grains on the tool head (9) is dimensioned in such a fashion that the peak to valley depth of the channels is sufficiently large to permit an elastic deformation to compensate for tolerances in roundness.

13. Method according to claim 11 or 12, characterized in that the honing is carried in at least two sequential operations.

14. The method according to claim 13, characterized in that, in each operation, the roughness profile of a previous honing operation is abrasively removed using a tool having finer cutting grit.

15. Method according to any one of the claims 11 through 14, characterized in that the tool (8) is periodically removed from working engagement and the processing location is subjected to flow of a cooling and lubricating medium.

16. Method according to any one of the claims 11 through 15, characterized in that, during honing, the tool (8) rotates at a rate of 250 to 6000 revolutions per minute.

17. Method according to any one of the claims 11 through 16, characterized in that, subsequent to honing, a grit removal process is carried out, and in particular, using diamond tipped tools and/or brushes having cutting grit.

18. Method according to any one of the claims 11 through 17, characterized in that, during finishing, an axial amount of material on the valve seat (4) of approximately 20 µm to 90 µm is removed.

19. Method according to any one of the claims 11 through 18, characterized in that, the tool (51, 71) is deflected during the honing process by means of a bending joint (50, 70) fashioned in its shaft to compensate for misalignment of the longitudinal axis (LA) of the valve seat.

20. Method according to claim 19, characterized in that the bending joint is effected through lubrication of the tool shaft, wherein the deflection is effected through elastic deformation of the bending joint.

21. Method according to any one of the claims 11 through 20, characterized in that the working tool and the work piece are driven in opposite directions during honing.

22. Method according to any one of the claims 11 through 21, characterized in that tools having a plurality of layers are utilized with which the cutting grit is ceramically bonded, wherein the tool is dressed by a flat dressing wheel with respect to whose surface, the tool is adjusted through an angle in correspondence with the desired conical shape of the work piece, wherein the tool and the dressing wheel are driven in opposite directions during dressing of the tool.